

REMARKS

With the addition of claims 11 to 14, claims 1, 4 to 8 and 11 to 14 are pending in the above-referenced application and are submitted for the Examiner's reconsideration.

Claims 1 and 4 to 8 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

While the written description rejections may not be agreed to, to facilitate matters, claim 1 has been amended without prejudice to recite "contacting a gold bonding wire to the conductive coating", which is expressly supported on page 2, lines 7 to 10, of the Specification. Accordingly, it is respectfully submitted that claims 1 and 4 to 8, as presented, comply with 35 U.S.C. § 112, first paragraph, and therefore the written description rejections should be withdrawn.

Claims 1 and 4 to 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,406,939 ("Lin") in view of United States Published Patent Application No. 2003/0080392 ("Zuniga-Ortiz"), United States Patent No. 6,372,539 ("Bayan") and knowledge the Office Action asserts to be well known..

Claim 1 as presented relates to a method for producing a conductive layered coating on an insulating substrate, the method including equipping, in selected regions, at least one surface of an electrically insulating substrate with a coating of an electrically highly conductive first metal, the coating being structured as conductor paths, cleaning the at least one coated surface, seeding the coating with seeds of a second metal, depositing a layer including an alloy of the second metal onto the coating seeded with the seeds of the second metal, firing the substrate deposited with the layer of the second metal to form the conductive layered coating, and contacting a gold bonding wire to the conductive coating. Claim 1 as presented recites that the firing is performed at a temperature below the melting point of the first metal, the second metal and the alloy. Claim 1 as presented further recites that the substrate includes an LTCC, the first metal includes silver, and the second metal includes palladium.

It is respectfully submitted that Lin, Zuniga-Ortiz, Bayan, and the knowledge the Office Action asserts to be well known, either alone or combined, does not disclose or suggest a method of producing a conductive coating on an electrically insulating LTCC substrate, in which selected regions of the surface of the substrate are equipped with a first metal which is seeded with a second metal and thereupon deposited with an alloy of the second metal and fired at a temperature below the melting points of the first metal, the second metal and the alloy. Indeed, none of the references cited, or the knowledge asserted to be well known (such

knowledge is not necessarily conceded to be well known), refer to an LTCC substrate or the firing of such a substrate at a temperature below the melting points of metal layers applied thereon.

In this regard, the Office Action admits on pages 3 to 4 that Lin does not teach a firing of a substrate but that it is well known in the art of printed circuit components to fire components to bond them together, as demonstrated, for example, at col. 8, lines 34 to 40, of Lin. However, col. 8, lines 34 to 40, of Lin refer to applying a temperature in order to melt solder, so rather than teach a firing at a temperature below the melting point, as provided for in the context of claim 1, Lin actually teaches just the opposite.

It is also respectfully submitted that Lin, Zuniga-Ortiz, Bayan, and the knowledge the Office Action asserts to be well known, either alone or combined, does not disclose or suggest connecting a gold bond wired to the conductive coating formed by the firing of the LTCC substrate, as provided for in the context of claim 1 as presented. Indeed, none of the references cited, or the knowledge asserted to be well known (which is not conceded), contemplate such a configuration.

The Office Action asserts that it would have been obvious "to have used a gold bonding wire as the particular connection technology of [Lin] '939 for attaching at least one chip because [Lin] '939 teaches that wire bonding is a conventional technology and because [Bayan] '539 teaches that gold wires in particular are suitable for successful bonding to silver." However, such an assertion mischaracterizes the teachings of Lin, which merely discuss wire bonding in the context of its disadvantages for use in integrated circuit boards. In particular, Lin states that:

Conventionally, there are three predominant chip-level connection technologies in use for integrated circuits, namely wire bonding, tape automated bonding (TAB) and flip chip (FC) to electrically or mechanically connected integrated circuits to leadframe or substrate circuitry. Wire bonding has been by far the most broadly applied technique in the semiconductor industry because of its maturity and cost effectiveness. However, this process can be formed only one wire bond at a time between the semiconductor chip's bonding pads and the appropriate interconnect points. Furthermore, because of the ever increasing operational frequency of the device, the length of the interconnects needs to be shorter to minimize inductive noise in power and ground, and to minimize cross talk between the signal leads.

Col. 1, lines 36 to 50. Accordingly, there is no motivation to adopt bonding wires as a chip-level connection technology in Lin's integrated circuit assemblies, and indeed, as demonstrated by the above excerpt, Lin specifically teaches against the use of bonding wires.

Accordingly, for at least these reasons, claim 1 as presented is allowable.

Claims 4 to 8 depend from claim 1, and therefore are allowable for at least the same reasons as claim 1 as presented.

New claims 11 to 14 have been added herein. It is respectfully submitted that new claims 11 to 14 add no new matter and are fully supported by the present application, including the Specification and/or the originally-filed claims. It is respectfully submitted that claims 11 to 14 allowable for essentially the same reasons more fully set forth above, with respect to claim 1.

CONCLUSION

In view of all of the above, it is respectfully submitted that all of the presently pending claims are allowable. It is therefore respectfully requested that the rejections be withdrawn. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is respectfully requested.

Respectfully submitted,

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